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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/662,675 | 09/15/2003 | Hyun-Ki Kim | 5000-1-371 | 1890 |
| 33942 | 7590 | 05/16/2006 | EXAMINER | |
| CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652 | | | LAZORCIK, JASON L | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1731 | |
| DATE MAILED: 05/16/2006 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,675

Applicant(s)

KIM ET AL.

Examiner

Jason L. Lazorcik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/15/2003 and 11/07/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/15/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/10/04 & 0707/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, and 4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Little (US 4,475,790). Little teaches a method of fabricating and assembling a fiber optic coupler which for purposes of this discussion is considered equivalent to an optical fiber block. With respect to Claim 1, Little discloses

1. A substrate provided with one or more “V-grooves” (Column 1 Lines 62-66)
2. A second piece of silicon covered by a layer of deformable hard glass which is read as a “cover formed from glass” (Column 6 Lines 48-49)
3. The pieces of the sub assembly comprising said cover and substrate, having been placed into contact, are heated to a predetermined bonding temperature and a voltage or electric field is applied across the assembly in the state in which the heated cover is being seated on the top of the substrate (Column 7 Lines 1-5).
4. Following the above steps, the cover and substrate are thus electrostatically bonded through a silicon-to-glass bond (Column 6 Line

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54) which is understood to be equivalent to the claimed silicon-glass anodic bonding technique

Little, in addition to the previously mentioned steps, discloses a method whereby the optical fibers are positioned or seated in each of the grooves, the wafer or cover registered with said substrate to form a stack, and subjecting said stack to electrostatic bonding. These steps by Little read directly on claim 2 where the stack, which includes at least one substrate with grooves, an optical fiber seated into said grooves, and a cover which covers the top of said substrate, is subjected to the heating step.

With respect to claim 3, Little states that the previously defined "stack" is subjected to an applied pressure in the electrostatic bonder during the bonding step (Column 7 Line 4). The application of said pressure is understood in Claim 3 to be equivalent to the application of a predetermined level of weight so that the substrate and cover are brought into uniform and close contact during the bonding step.

Regarding Claim 4, Little explicitly states in addition to the above discussion of claim 1, that the electrostatic bonding step is to be carried out in a suitable vacuum atmosphere (Column 7 Line 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Little in view of the Corning materials physical data sheet. As outlined in the above rejection of Claim 1, Little teaches a method of fabricating an optical fiber block wherein a cover made from Corning 7070 glass and substrate made from silicon are bonded via a silicon-glass anodic bonding technique. Little further teaches that due to the elevated temperatures encountered in electrostatic bonding the thermal expansion coefficients of the glass cover and silicon substrate are required to be closely matched (Column 5 Lines 58-63). Little does not teach the use of Pyrex glass as the specific material of fabrication for the cover. According to a material physical data sheet provided by Corning relating the properties of Pyrex 7740 Borosilicate Glass with the properties of 7070 lithia potash borosilicate glass, both materials are categorized as silicon thermal expansion matching glasses. It would have been obvious to one skilled in the art at the time of the invention to utilize Pyrex glass for the fabrication of the cover plate in the optical fiber block in order to minimize thermal stress during electrostatic bonding of the cover to a silicon substrate.

Conclusion


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLL


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